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Interaction of radiation with ultrasonic, infrared

The news note that I have clipped here reminded me of the flurry of interest some 20 and odd years ago in the effect of infrared on the frequency of chromosome abberations when applied after radiation. I just wondered whether that work has been completely forgotten and if so whether it might be worth reviving it for your attention with a view to similar applications of that synergism.

I would guess, there has been some fairly intense reexamination of these issues in connection with the calibration of radiation effects during space flight.

I do not recall ever having seen any comparable work on interaction of chemical agents with infrared.

OUTLOOK

Fast Check for Thyroid Problems

Hypothyroidism in newborns—a condition that can cause arrested physical development and irreversible mental retardation—may now be detected quickly with an antiserum highly sensitive to thyroid-stimulating hormone (TSH). Its developer, Dr. A. F. Parlow, research professor of Ob-Gyn at UCLA, says it can save up to three weeks in diagnosing a thyroid problem, paving the way to immediate replacement therapy and prevention of the severe damage caused by delay. The amount of TSH in the blood of infants with low thyroid hormone levels determines presence of hypothyroidism.

Bones of Glass

Bone replacements made of a glass-ceramic substance called bioglass have advanced from animal to clinical testing in Europe and may soon be used on patients in this country. Developed and tested by Dr. Larry L. Hench at the University of Florida in Gainesville (MWN, Dec. 12, '73, p. 13), the material contains several elements—notably calcium and phosphorus—that resemble a chief element in living bone, hydroxyapatite. When a bioglass replacement is brought into contact with living bone, the two gradually fuse in much the same way bones knit after a fracture, eliminating the need for glue, bolts, or screws. Bioglass' most exciting potential, Dr. Hench thinks, is for replacing diseased or shattered sections of the long bones of arms or legs that might otherwise have to be amputated.

Double Blow Against Cancer Cells: Drugs and Sound

Combining ultrasound with chemotherapy enhances the effectiveness of such agents as nitrogen mustard against mouse leukemia, reports a research team at Bowman Gray School of Medicine in Winston-Salem, N.C. Treating cultured leukemia cells with continuous ultrasound (at about 1,000 times the intensity used for diagnostic purposes) increased uptake of five antileukemia drugs and survival times of healthy mice injected with these cells. Ultrasound may aid chemotherapy by altering the membrane permeability of cancer cells or by affecting mitosis, suggests Dr. Frederick W. Kremkau. The researchers used L1210 leukemia cells, he adds, because they're good predictors of chemotherapy effectiveness for many kinds of human tumors. Next, they plan to try the ultrasound-drug combination in vivo against solid mouse tumors.

Testosterone and Cardiovascular Disease

Testosterone may be an important risk factor in cardiovascular disease, according to investigators at Georgetown University, who have also provided the first significant experimental evidence of a link between sex and age and the development of arterial thrombosis. Dr. Peter W. Ramwell and associates report in the June 24 *Nature* that when arterial clots were induced in rats of both sexes and varying ages, at three, four, or six months, the males had about twice the mortality rate and thrombus weight females had. For both sexes mortality rate and thrombus weight increased with age, though the sex discrepancy narrowed at 12 months. Testosterone quadrupled the mortality rate in both sexes, but this increase was significantly reduced when a nonsteroidal antiandrogen, flutamide, was injected with the testosterone.